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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,213	03/15/2004	William L. Brenneman	102426-400	2024

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WIGGIN AND DANA LLP
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EXAMINER

LAM, CATHY FONG FONG

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/801,213

Applicant(s)

BRENNEMAN ET AL.

Examiner

Cathy Lam

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 30 & Sept. 06, 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

In view of the amendment and remarks filed on June 30th 2005, the objection has been withdrawn and the Terminal Disclaimer filed on September 06, 2005 overcomes the obviousness-type double patenting rejection. The pending claims continue to be unpatentable as following:

Election/Restrictions

1. Claims 15-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected method claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on June 30th 2005, is acknowledged.
2. This application contains claims 15-20 drawn to an invention nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8 and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chen et al (US 5800930).

Chen discloses a chemically treated copper foil that is laminated to a dielectric substrate. The dielectric substrate is particularly glass filled epoxy board (col 1 L 20-21).

The copper foil includes a nodular copper/nickel alloy deposited onto the surface of the copper foil (col 2 L 8-10, L 32-34). The average height of the nodules is from about 0.5 μm - 3 μm , more preferably from about 0.7 μm – 1.5 μm (col 3 L 14-16).

A chromium/zinc anti-tarnish coating is then coated to the nodulated copper foil before laminated to the dielectric substrate (col 5 L 53-57). The examiner takes the position that the chromium/zinc coated nodular layer resembles the presently claimed laser ablation inhibiting layer.

The peel strength between the treated copper foil and the dielectric substrate is 11.7 lbs/in (col 5 L 56-59).

Chen although is silent about the reflectivity value of the laser ablation inhibiting layer. In view of applicant's disclosure (Fig. 9), it would be inherent that Chen possesses the claimed reflectivity since reflectivity is

depended upon the nodule height and the nodule height directly relates to the peel strength. Chen discloses the claimed nodular height range and the peel strength, therefore it is inherent that Chen's anti-tarnishing coating layer possesses the claimed reflectivity.

4. Claims 1-2 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al (US 5071520).

Lin teaches a copper or copper base alloy foil used for bonding to a dielectric support layer, to make a printed circuit board. The dielectric support layer can be a fiberglass reinforced epoxy resin or a polyimide (col 1 L 23-26).

The copper or copper base alloy foil (or metal foil) is electrolytically treated on the surface adhering to the support layer. The treatment includes electrolytically forming dendrites on the surface (col 3 L 21-24). Then, a coating of zinc is used to cover the dendritic surface, followed by a chromate treatment (or an antitarnish treatment) (col 3 L 40-47 & L 63-65).

Lin also teaches that an antitarnish treatment which may include both chromium and zinc ions can be applied to the metal foil (col 4 L 13-15).

Lin's treated foil has a peel strength of at least 7 pounds per inch (col 5 L Examples A-E).

The examiner takes the position that the anti-tarnishing treatment disclosed by Lin resembles the laser ablation inhibiting layer since it is made up of both chromate and zinc oxide material as claimed by the applicant (col 5 Example C).

Lin is silent about the reflectivity of the laser ablation inhibiting layer. Since the lamination peel strength is related to the reflectivity, and Lin teaches the claimed peel strength and all the claimed materials for the layer, inherently the reflectivity would be within the claimed range.

Claim Rejections - 35 USC § 103

Claims 1-14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al (US 5071520) or Chen et al (US 5800930) in view of Mori (US 6703564).

5. Both Lin and Chen teach the present invention but do not teach a dielectric substrate having via holes or blind via holes over which the treated copper foil is bonded.

Mori teaches a printed wiring board comprised of a dielectric layer (3) which is formed onto a (or a plurality of) prepreg layer(s), then via hole (6,7) are laser drilled through the dielectric layer (3) (col 3 L 39-45 & Fig. 1).

In view of the prior art teachings, one skill in the art would choose a dielectric substrate with blind via holes or via holes because via holes can form electrical connections between the surfaces and it is well known in the circuit board field.

Response to Arguments

6. Applicant's arguments filed June 30th 2005 have been fully considered but they are not persuasive. Applicant disagrees the art rejection and raises the following issues:

- A. Lin teaches an antitarnish treatment not a laser ablation inhibiting layer that prevents ablation of the copper transforming the desired blind via into a through hole via.
- B. Lin does not teach the antitarnish layer having a reflectivity value of at least 40.
- C. Lin's reference discloses a process to improve peel strength by forming a plurality of dendrites on the surface of the foil and subjecting the foil to a rinse in an aqueous solution containing an effective amount of a silane coupling agent. Whereas applicant decreasing the surface roughness to compromise the peel strength between the copper foil and the dielectric substrate.

In respond to the above issues:

- A. Lin's anti-tarnish layer comprises all the materials claimed as a laser ablation inhibiting layer. Therefore, Lin's anti-tarnish layer would perform the same function.
- B. Since the reflectivity relates to the peel strength, Lin clearly teaches the treated copper foil the peel strength of the present invention, inherently the reflectivity is met.
- C. Lin discloses a copper foil that has been surface treated with the same ingredients as claimed by the applicant. The treated copper foil possesses the claimed peel strength.

Applicant argument of that the prior art invention is opposite to the present invention is indeed without any basis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Cathy Lam
Primary Examiner
Art Unit 1775

cfl
September 16, 2005